Pazienti anziani

DLBCL

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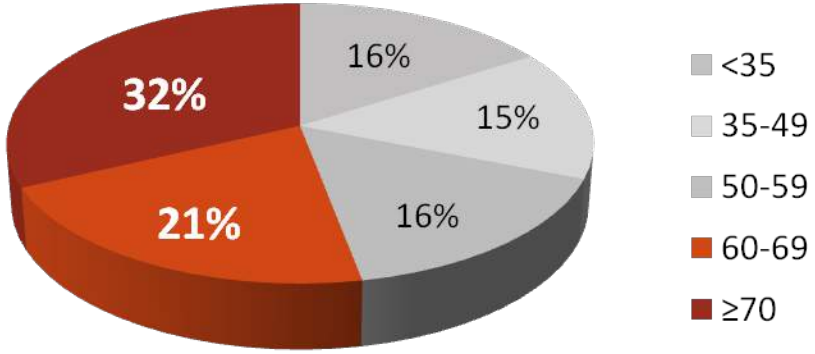
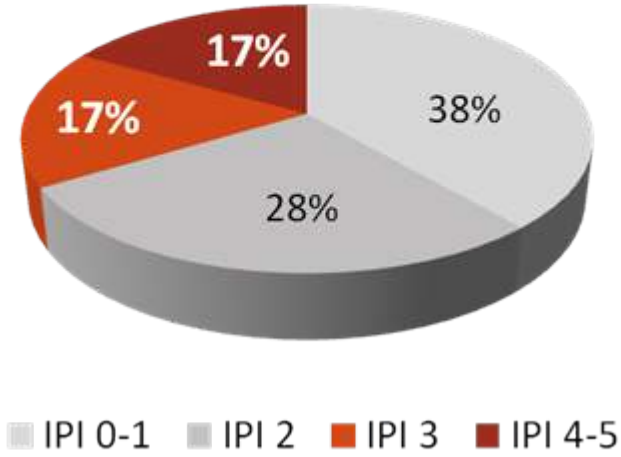
Diffuse Large B-Cell Lymphoma

- **Most common NHL: 31%**
  - **Peak incidence in sixth decade**
  - Incidence increased by 50-90% (depending on race, gender)

Distribution by age: 53% of pts are ≥60



Distribution by IPI score: 34% of patients are IPI 3-5

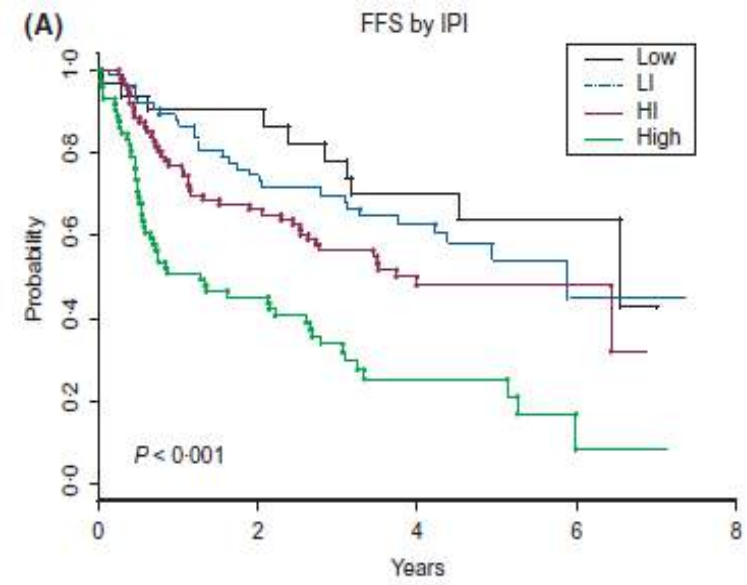


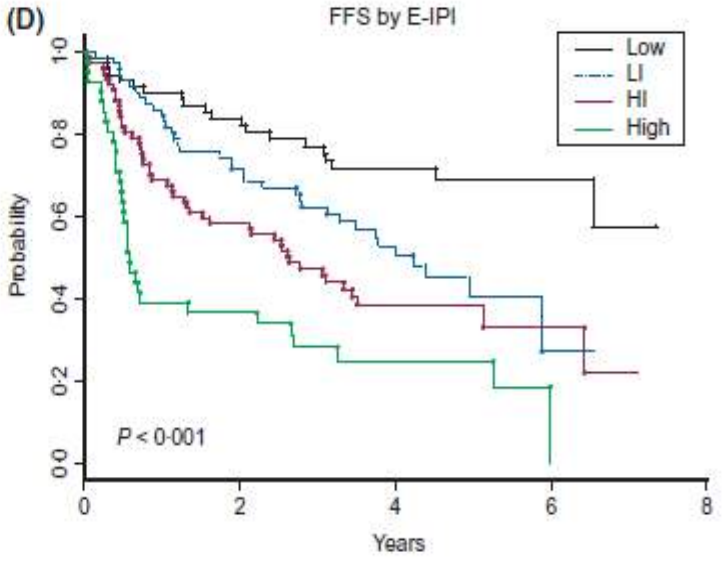
Prognostic factors for survival

IPI risk factors	Relative risk
Age: ≤60 yrs vs. > 60yrs	**1.96**
Serum LDH: normal vs. above normal	1.85
ECOG PS: 0,1 vs: ≥ 2	1.80
Extranodal involvement: ≤ 1 vs. ≥ 2 sites	1.48
Ann Arbor Stage: I/II vs. III or IV	1.47

Shipp, Blood 1994

Prognostic factors in DLBCL: elderly IPI (E-IPI), cut-off 70 years





R-CHOP x 6 performed:

- 70% of ≥70 years
- 88% of <70 years (p < .0001)

Reasons for stopped therapy (≥70 years versus <70 years):

- complications and toxicity (34% vs. 31%)
- patient withdrawal or refusal (26% vs. 0%)
- toxic death (24% vs. 25%)
- progressive disease (5% vs. 25%)
- other reasons (11% vs. 19%)

Patients ≥70 years with incomplete therapy versus completed therapy:

- **3-year FFS 23% vs. 60%, p .0001**
- **3-year OS 30% vs. 70%, p.0001**

Advani RH et al, BJH 2010

COMPREHENSIVE GERIATRIC ASSESSMENT (CGA)

ELDERLY PROJECT

1.General Data 2.Disease Status 3. ADL 4.IADL 5.CIRS-G

Patient age: <80
ADL: 6
IADL 8
Comorbidity grade 2: 0
Comorbidity grade 3-4: 0
Patient profile: FIT

FONDAZIONE ITALIANA LINFOMI

Patient age: ≥80
ADL: 6
IADL 8
Comorbidity grade 2: 0
Comorbidity grade 3-4: 0
Patient profile: UNFIT

TIME SPENT ON DETERMINATE PATIENT STATUS
< 10 MINUTIES

Patient age: >80
ADL: 5
IADL 5
Comorbidity grade 2: 1
Comorbidity grade 3-4: 0
Patient profile: UNFIT

COMPREHENSIVE GERIATRIC ASSESSMENT (CGA)

ELDERLY PROJECT

DLBCL ≥65 years; CGA, web based platform.

Treatment Curative: ≥70% anthracycline doses; Intermediate: <70% anthracycline doses;

Palliative: no anthracycline.

December 2013 - May 2018: 1353 patients registered in 37 centers.

Median age 76 years (65-94).

FIT 42%, UNFIT 25%, FRAIL 33%.

With a median follow up of 29 months (1-59) 3y-OS was 64%; according to sCGA the OS was significantly different in the three geriatric groups

Submitted to 15-ICML, Lugano 2019

First line treatment

clinical practice guidelines

Annals of Oncology 26 (Supplement 5): v116–v125, 2015
doi:10.1093/annonc/mdv304

Diffuse large B-cell lymphoma (DLBCL): ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up†

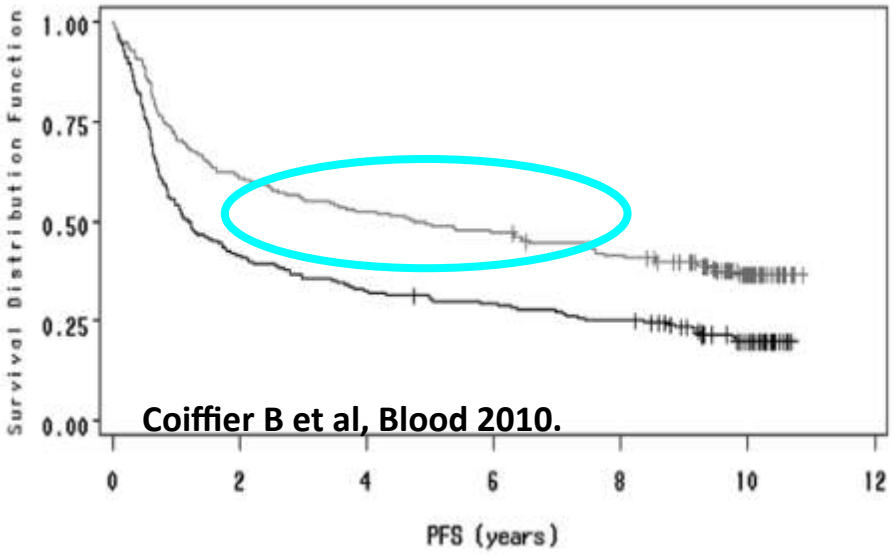
H. Tilly[1], M. Gomes da Silva[2], U. Vitolo[3], A. Jack[4], M. Meignan[5], A. Lopez-Guillermo[6], J. Walewski[7], M. André[8], P. W. Johnson[9], M. Pfreundschuh[10] & M. Ladetto[11], on behalf of the ESMO Guidelines Committee*

Elderly >60 years		
Fit, 60–80 years	>80 years without cardiac dysfunction	Unfit or frail or >60 years with cardiac dysfunction
R-CHOP21 × 6–8 (R-CHOP21 × 6 for IPI low risk) or R-CHOP14 × 6 with 8 R Consider CNS prophylaxis in patients at risk	Attenuated regimens: R-miniCHOP21 × 6	Doxorubicin substitution with gemcitabine, etoposide or liposomal doxorubicin or others: R-C(X)OP21 × 6 or palliative care

First line treatment: FIT patients

RCHOP vs CHOP: 10-yrs PFS 37% vs 20%

CHOP21 vs. R-CHOP21



R-CHOP21 is the standard in DLBCL-FIT patients!

First line treatment

clinical practice guidelines

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R-miniCHOP

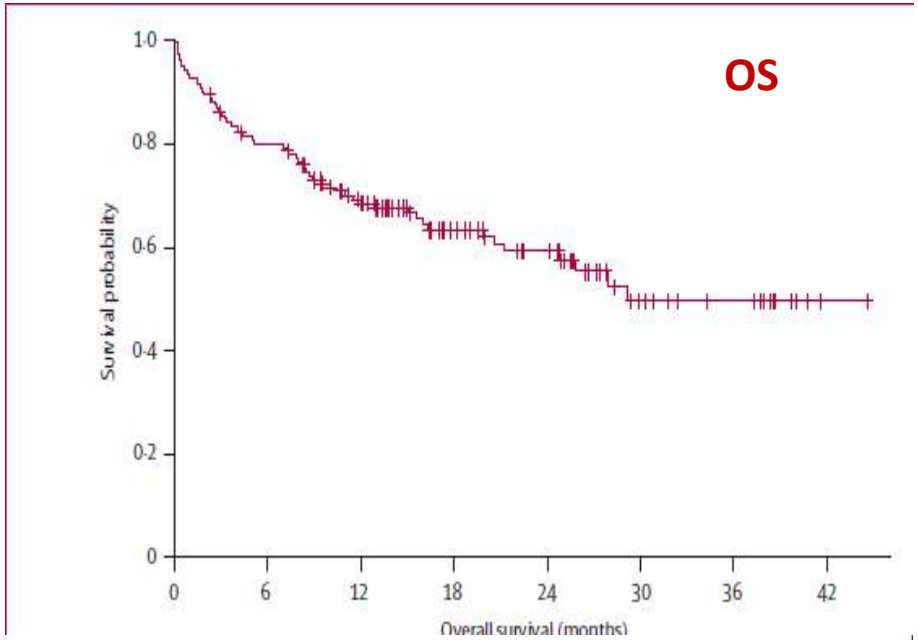
	Patients (n=149)
Men	51 (34%)
Age (years)	83 (80–95)
Performance status	
0	27 (18%)
1	72 (48%)
2	50 (34%)
Ann Arbor stage	
I	13 (9%)
II	24 (16%)
III	35 (23%)
IV	77 (52%)
Tumour mass ≥10 cm	30 (20%)
>1 extranodal sites	55 (37%)
LDH concentration >618 U/L	102 (68%)
B symptoms*	49 (33%)
β2-microglobulin ≥3 mg/L	82/112 (73%)
Serum albumin <35 g/L	69/137 (50%)
IPI	
0–1	13 (9%)
2	31 (21%)
3	46 (31%)
4–5	59 (40%)
IADL scale†	
Without limitation (score 4)	63 (47%)
With limitation (score <4)	72 (53%)

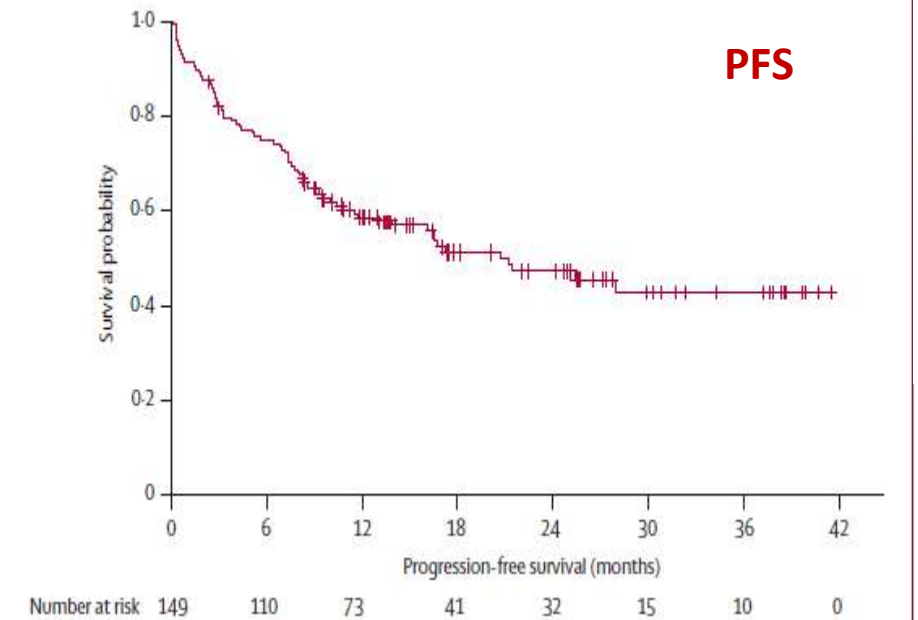
6 cycles of Rituximab with low-dose CHOP (R-miniCHOP) every 21 days

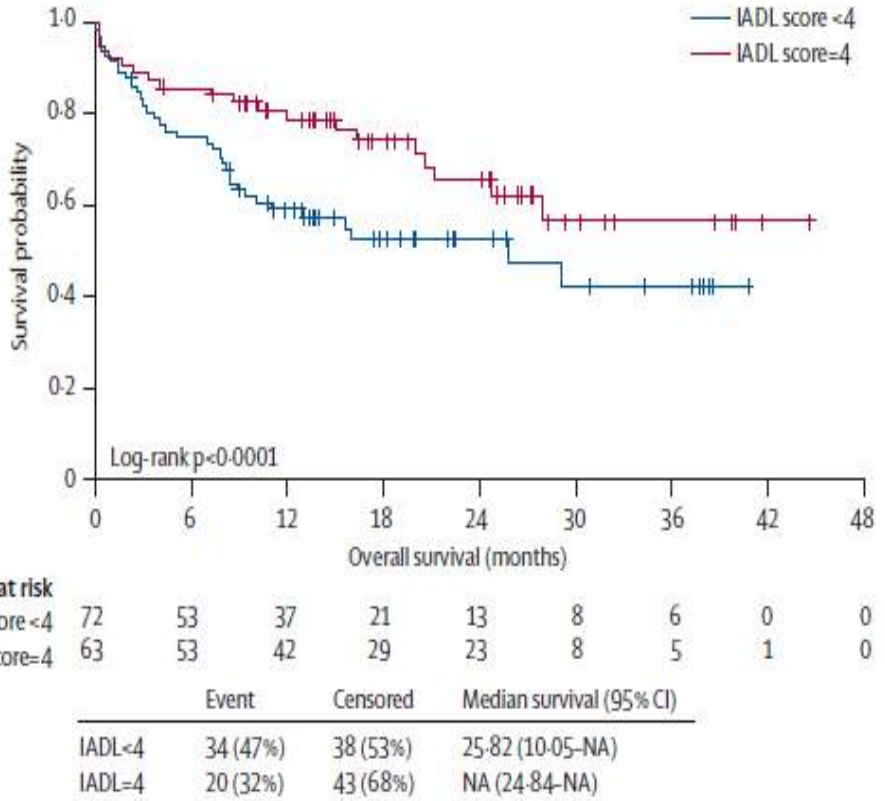
- **Rituximab 375 mg/sqm day 1**
- **Cyclophosphamide 400 mg/sqm day 1**
- **Doxorubicin 25 mg/sqm day 1**
- **Vincristine 1 mg day 1**
- **Prednisone 40 mg/sqm on days 1–5.**

Peyrade F et al, Lancet Oncol 2013

R-miniCHOP







Number at risk									
IADL score <4	72	53	37	21	13	8	6	0	0
IADL score=4	63	53	42	29	23	8	5	1	0

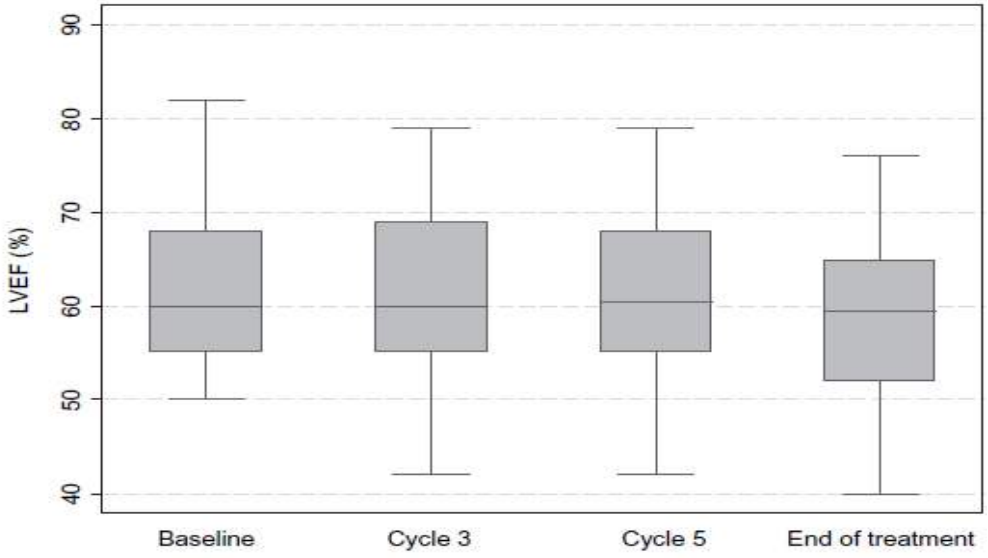
	Event	Censored	Median survival (95% CI)
IADL<4	34 (47%)	38 (53%)	25·82 (10·05–NA)
IADL=4	20 (32%)	43 (68%)	NA (24·84–NA)

Peyrade F et al, Lancet Oncol 2013

R-COMP in elderly DLBCL

Characteristic	Population ($N = 72$)	
	n	%
Age, years		
Median	72	
Range	61–83	
≥70 years	43	60
Male gender	32	44
Clinical stage		
I–II	22	31
III–IV	50	69
Extranodal involvement	46	64
Bone marrow involvement	16	22
ECOG performance status		
0–1	59	82
>1	13	18
Elevated LDH	49	72
International Prognostic Index		
1	14	21
2	16	23
3–5	38	56
LVEF		
Median	61	
Range	50–89	

	ITT population ($n = 72$)			Efficacy population ($n = 62$)		
	n	%	95% CI	*n*	%	95% CI
Response to chemotherapy						
CR	41	57	43–67	41	66	53–78
PR	10	14	7–24	10	16	8–28
Less than PR	21	29	19–41	11	18	9–30
Alive, NED	55	76	65–86	50	81	69–90
Relapsed NHL*	5	12	4–26	5	12	4–26
Deaths	17	24	14–35	12	20	11–32
3-year survival						
OS		72	58–82		77	62–87
FFS		39	28–51		46	32–58
PFS		69	56–79		74	60–83



Luminari S et al, Ann Oncol 2010

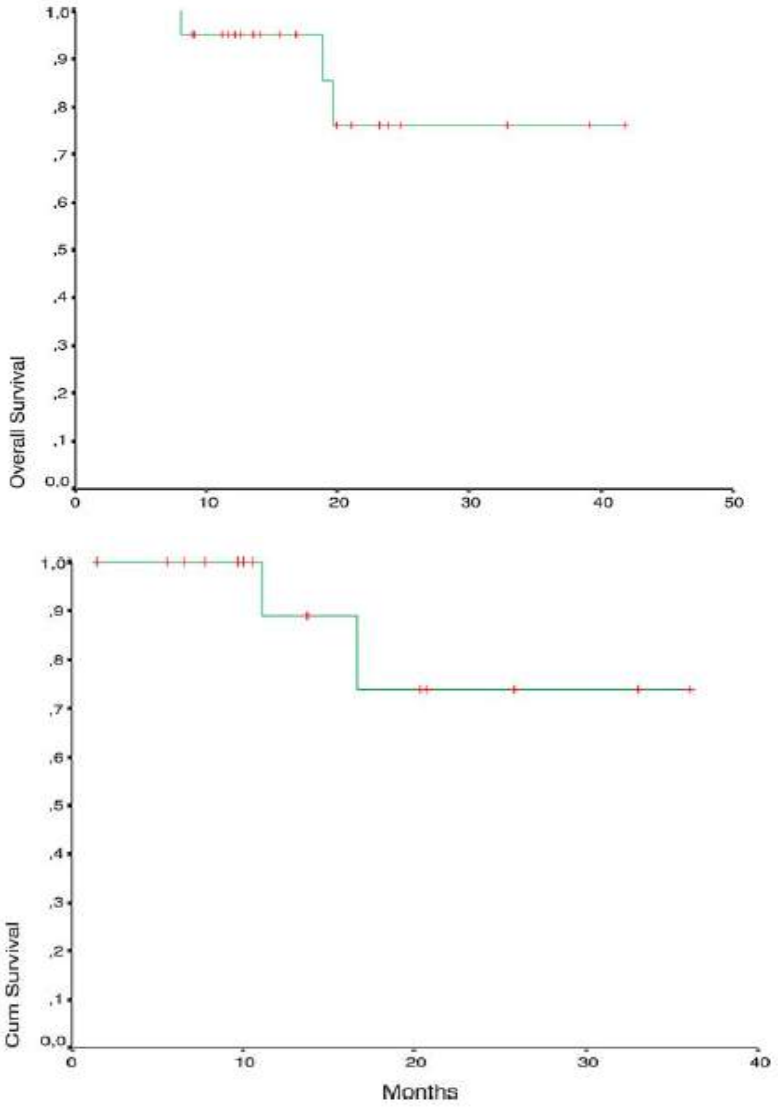
R-COMP in elderly aggressive NHL with concurrent cardiac disease or pretreated with anthracyclines

Table I. Patients' characteristics at baseline

Patients characteristics	*N* (%)
Sex (male/female)	13 (62)/8 (38)
Age (median)	70 (range 54–76)
Histology (B-cell diffuse large/B-cell mantle)	18 (86)/3 (14)
Stage (I/II/III/IV)	2 (9)/5 (24)/5 (24)/9 (43)
Symptoms (A/B)	16 (76)/5 (24)
IPI (low, low/intermediate, intermediate/high, high)	7 (33)/8 (38)/5 (24)/1 (5)
Extranodal involvement	11 (52)
Bulky disease	5 (24)
Previous antracycline chemotherapy	8 (38)

One case of CHF resolved with farmacologic approach

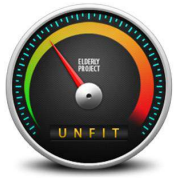
- ✓ **Median LVEF after 3 courses: 60% (range, 38-74%)**
- ✓ **Median LVEF at the end of treatment: 60% (range, 40-69%)**



Rigacci L et al, Hematol Oncol 2007

Nonpegylated Liposomal Doxorubicin as a Component of R-CHOP Is an Effective and Safe Alternative to Conventional Doxorubicin in the Treatment of Patients With Diffuse Large B-Cell Lymphoma and Preexisting Cardiac Diseases

Sarah Rohlfing,[1] Matthias Aurich,[2] Tilman Schöning,[3] Anthony D. Ho,[1] Mathias Witzens-Harig[1]



25 DLBCL patients

Table 2 Preexisting Cardiac Diseases

Variable	n
Heart Failure	14
Coronary Heart Disease/Ischemic Cardiopathy	10
Cardiac Arrhythmia	10
History of Anthracyclines and Breast Radiation	2
Dilated Cardiomyopathy	2
Cerebral Stroke/Transient Ischemic Attack	2
Pulmonary Hypertension With Reduced RVEF	1
Aortic Valve Replacement	1
Distinct LV Hypertrophy With Aortic Stenosis	1

Table 1 Demographic Data

Variable	n
Age, Years	
<60	5
60-75	9
>75	11
Sex	
Male	20
Female	5
Ann Arbor Stage	
I/II	12
III/IV	13
International Prognostic Index	
Low/low-intermediate risk	12
High/high-intermediate risk	13
Therapeutic Situation	
First-line	23
Second-line	2

Rohlfing et al. Clinical Lymphoma, Myeloma and Leukemia 2015

Nonpegylated Liposomal Doxorubicin as a Component of R-CHOP Is an Effective and Safe Alternative to Conventional Doxorubicin in the Treatment of Patients With Diffuse Large B-Cell Lymphoma and Preexisting Cardiac Diseases

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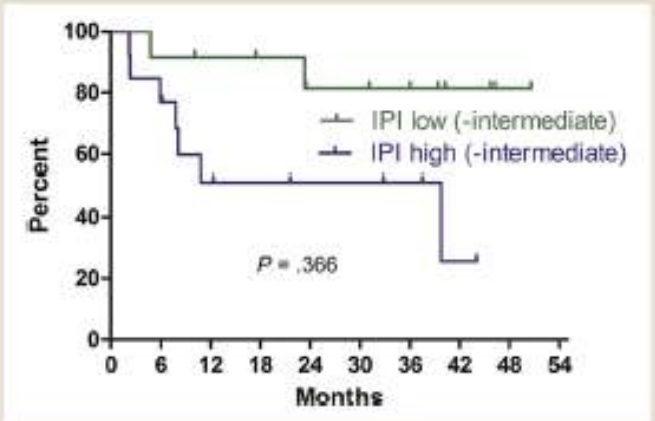
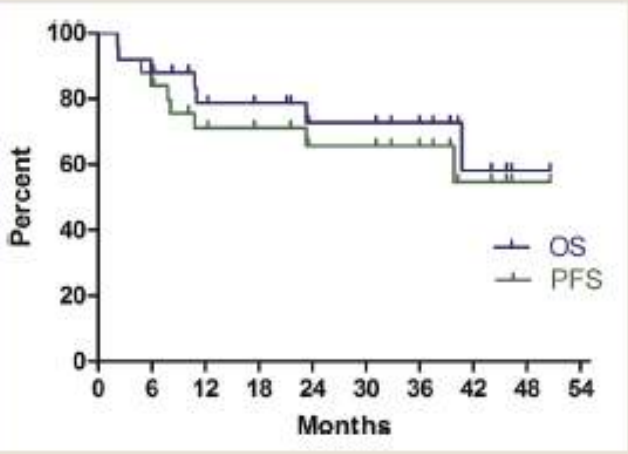
Table 3 Median LVEF Before and After Therapy With NPLD

	LVEF Before	LVEF After
All Patients	51%	50%
Patients With Normal LVEF (≥55%)	60% (55%-65%)	57% (40%-61%)
Patients With Reduced LVEF (<55%)	45.5% (35%-53%)	46.5% (15%-56%)

Figure 2 Progression-Free Survival Depending on International Prognostic Index (IPI)





Rohlfing et al. Clinical Lymphoma, Myeloma and Leukemia 2015

Nonpegylated liposomal doxorubicin combination regimen in patients with diffuse large B-cell lymphoma and cardiac comorbidity. Results of the HEART01 phase II trial conducted by the Fondazione Italiana Linfomi

Stefano Luminari[1,2] | Elda Viel[3] | Andrés José Maria Ferreri[4] | Francesco Zaja[5] | Emanuela Chimienti[6] | Gerardo Musuraca[7] | Alessandra Tucci[8] | Monica Balzarotti[9] | Monica Tani[10] | Francesca Salvi[11] | Emanuela A. Pesce[12] | Angela Ferrari[1] | Anna M. Liberati[13] | Antonio Spadea[14] | Dario Marino[15] | Maria Bruno-Ventre[4] | Stefano Volpetti[5] | Chiara Bottelli[8] | Elena Ravaioli[6] | Francesco Merli[1] | Michele Spina[6]

Hematological Oncology. 2018;**36**:68–75.

Variable	N	%	Missing N (%)
Age			
Median	76		
Range	53-90		-
>60	47	94	
Sex, M	35	70	-
Stage			
I-II	19	38	-
III-IV	31	62	
PS > 1	7	14	-
LDH > UNL	23	51	5 (10)
ENS > 1	5	10	-
Bulky[a]	5	10	1 (2)
IPI			
0-1	11	24	
2	16	26	5 (10)
3-5	18	40	

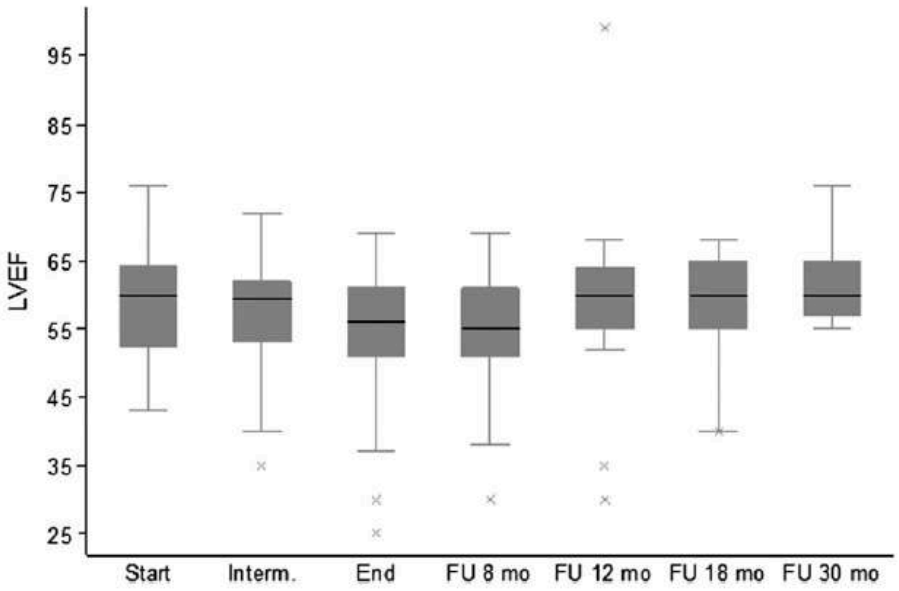
Variable	N	%	Missing N (%)
Cardiac disorders			
Ischemic cardiopathy	21	35	
Atrial fibrillation	9	15	
Left ventricular hypertrophy	8	13	
LVEF <50%	7	12	
Ventricular arrhythmia	5	8	-
Moderate/severe mitral valve disease	3	5	
Moderate aortic valve disease	3	5	
Pulmonary hypertension	2	3	
Uncontrolled hypertension	2	3	
Altered ECG	27	59	4 (8)
LVEF			
Median	60	-	3 (6)
IQR	12		

Nonpegylated liposomal doxorubicin combination regimen in patients with diffuse large B-cell lymphoma and cardiac comorbidity. Results of the HEART01 phase II trial conducted by the Fondazione Italiana Linfomi

Response	N	% (95CI)
CR	28	56 (41-70)
PR	8	16 (4-29)
ORR	36	72 (58-84)
SD/PD	10	20 (10-34)
NA/EW	4	8 (2-19)
3-yr survival	# events	% (95CI
OS	22	50 (34-65)
PFS	30	38 (24-51)
FFS	36	27 (15-40)

TABLE 4 Summary of cardiac events during treatment

	Population (N = 50)	
Cardiac disorder	Grades 1-2, n (%)	Grades 3-4, n (%)
Heart failure	1(2)	1(2)
LVEF drop ≥20%	2(4)[a]	3(6)
Increased troponin	2(4)	-
Angina	-	1(2)
Atrial fibrillation	-	1(2)
Tot	5(10)	6(12)



No significant modifications from baseline values of LVEF were observed during treatment and follow-up.

Luminari S et al, Hematol Oncol 2018

R-CHOP versus R-COMP: Are They Really Equally Effective?

M. Mian *, I. Wasle *, G. Gamerith *, P. Mondello †, T. Melchardt ‡, T. Jäger §, W. Linkesch ¶, M. Fiegl *

Clinical Oncol 2014

Retrospective analysis

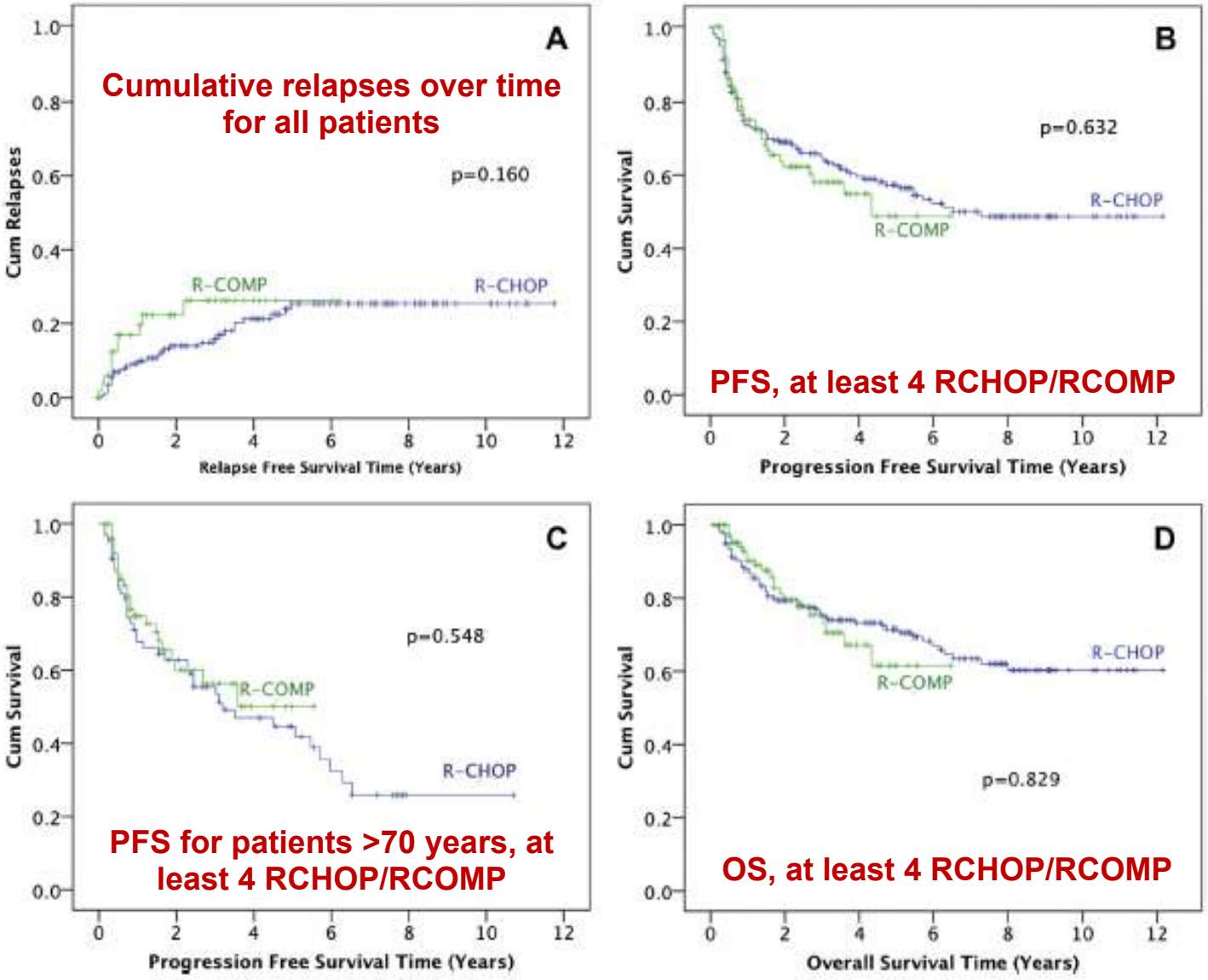
364 untreated DLBCL patients: 218 (60%) R-CHOP, 146 (40%) R-COMP.

Parameter	R-CHOP ($n = 218$)			R-COMP ($n = 146$)			*P* value
	No.	Valid	%	No.	Valid	%	
Male:female	118:100	218	54:46	75:71	146	51:49	0.605
B symptoms	77	187	41	58	146	40	0.789
Age categories (years)							
<60	93	216	43	13	146	9	<0.001
60–69	50		23	30		20	
70–79	61		28	62		43	
>80	12		6	41		28	
Stage							
I	37	218	17	22	146	15	0.461
II	60		27	34		23	
III	45		21	27		19	
IV	76		35	63		43	
Stage III/IV	121	218	55	88	146	60	0.367
≥2 extranodal sites	64	208	31	44	146	30	0.899
Performance status ≥2	48	188	25	37	145	25	0.998
LDH > UNL	108	190	57	80	146	55	0.708
International prognostic index ≥2	140	197	71	112	146	77	0.242
Lymphadenopathy >5 cm and/or maximum spleen diameter ≥20 cm	93	202	46	30	123	24	<0.001
Pre-existing comorbidities							
Cardiovascular disease	83	206	40	103	146	71	<0.001
Diabetes mellitus	18	206	9	21	146	14	0.096
COPD and/or asthma	11	205	5	21	146	14	0.004
Gastrointestinal disorders	17	206	8	22	146	15	0.045
Other neoplasias	25	205	12	30	146	20	0.033
Creatinine >2 mg/dl	18	205	9	21	146	14	0.100
Neurological disorders	16	205	8	23	146	16	0.020
Rheumatological diseases	18	205	9	17	146	12	0.378
Psychiatric disorders	15	205	7	5	146	3	0.121
Sum of comorbidities							
None	79	204	39	18	146	12	<0.001
1–2	98		48	85		58	
3–4	26		13	40		27	
>4	1		0.5	3		2	

R-CHOP versus R-COMP: Are They Really Equally Effective?

M. Mian *, I. Wasle *, G. Gamerith *, P. Mondello †, T. Melchardt ‡, T. Jäger §, W. Linkesch ¶, M. Fiegl *

Clinical Oncol 2014



Liposomal doxorubicin vs. conventional formulation

PS1038

LIPOSOMAL DOXORUBICIN IN AGGRESSIVE B CELL LYMPHOMA SHOWS SIMILAR EFFICACY TO THE CONVENTIONAL FORMULATION: LONG TERM RESULTS FROM A RETROSPECTIVE COHORT STUDY

A. García-Noblejas[1,*], J. Cannata-Ortiz[1], E. Acuña[1], J. Loscertales[1], A. Alegre[1], R. Arranz[1]

[1]Hematology, Hospital La Princesa, Madrid, Spain

EHA EUROPEAN HEMATOLOGY ASSOCIATION

Retrospective analysis.

78 patients:

- ✓ **61 control arm (A): conventional doxo**
- ✓ **17 study arm (B): lyposomal doxo**

Characteristics	Group A N= 61	Group B N= 17	p
Age (range)	70 (41-88)	78 (59-89)	0.001
Male / female	21/40	9/8	0.165
ECOG >2	4 (7%)	2 (11%)	0.617
Ann Arbor III-IV	43 (70%)	10 (56%)	0.389
B symptoms	38 (63%)	8 (44%)	0.179
Comorbidities			
HBP	24 (39%)	13 (76%)	0.007
DM	3 (5%)	2 (12%)	0.308
Dyslipemia	11 (18%)	5 (29%)	0.304
Smoking	15 (25%)	2 (12%)	0.257
Cardiopathy			0.001
Atrial fibrillation	6 (10%)	3 (18%)	
Ischemic	-	3 (18%)	
cardiopathy	-	1 (6%)	
Other			
LVEF <50%	2 (4%)	5 (31%)	0.001

Summary/Conclusion: In this study, the association use of LD to inmunochemotherapy in fragile patients showed similar efficacy as conventional doxorubicin, without increased toxicity.

Cardiotoxicity with rituximab, cyclophosphamide, non-pegylated liposomal doxorubicin, vincristine and prednisolone compared to rituximab, cyclophosphamide, doxorubicin, vincristine, and prednisolone in frontline treatment of patients with diffuse large B-cell lymphoma A randomised phase-III study from the Austrian Cancer Drug Therapy Working Group *[Arbeitsgemeinschaft Medikamentöse Tumortherapie AGMT]* (NHL-14)

Michael A. Fridrik [a,*], Ulrich Jaeger [b], Andreas Petzer [c], Wolfgang Willenbacher [d], Felix Keil [e], Alois Lang [f], Johannes Andel [g], Sonja Burgstaller [h], Otto Krieger [i], Willi Oberaigner [j], Kurt Sihorsch [k], Richard Greil [l]

European Journal of Cancer 58 (2016) 112–121

Baseline characteristics.

	R-COMP	R-CHOP
Randomised	43	45
Excluded (n)	3	6
Eligible (n)	40	39
Age median years (range)	65 (18–81)	65 (22–84)
Age >60 years	24 (60.0%)	25 (64.1%)
Male/female	23/17	22/17
WHO >1	1 (2.5%)	3 (7.7%)
IPI very good (0 P)	3 (7.5%)	1 (2.6%)
IPI good (1–2 P)	27 (67.5%)	28 (71.8%)
IPI poor (>2 P)	10 (25.0%)	10 (25.7%)
St III, IV	19 (47.5%)	18 (46.2%)
Non-smoker	20 (50.0%)	21 (53.8%)
Cardiac function WHO° 0	40 (100%)	39 (100%)
Hypertension	5 (12.5%)	6 (15.4%)
NT-proBNP (pg/ml)	108 (19–2072)	134·5 (10–920)
NT-proBNP <400 pg/ml	34 (89.0%)	35 (89.7%)
LVEF median (range)	64 (52–83)	63·5 (45–75)
LVEF <50%	0 (0.0%)	1 (2.6%)
Cumulative doxorubicin dose (mg/sqm)	295 mg/m^2	294.5 mg/m^2

R-COMP vs. R-CHOP

mean LVEF: 63.31% vs. 62.25%, (P 0.167).

LVEF < 50% during treatment: 4.6% vs. 15.8% (P<0.001).

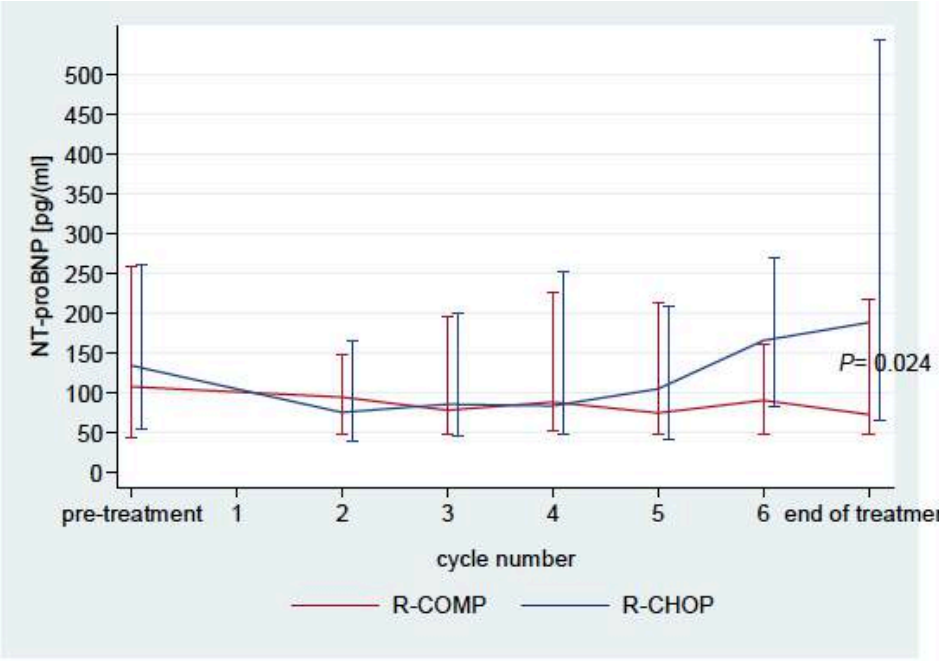
NT-proBNP levels < 400 pg/ml during and at the end of treatment: 90% patients vs. 66.7% (P 0.013).

SAE: 26 vs. 40 (Infections: 15 vs. 28) (P 0.029).

Cardiotoxicity with rituximab, cyclophosphamide, non-pegylated liposomal doxorubicin, vincristine and prednisolone compared to rituximab, cyclophosphamide, doxorubicin, vincristine, and prednisolone in frontline treatment of patients with diffuse large B-cell lymphoma A randomised phase-III study from the Austrian Cancer Drug Therapy Working Group *[Arbeitsgemeinschaft Medikamentöse Tumortherapie AGMT]* (NHL-14)

Michael A. Fridrik [a,*], Ulrich Jaeger [b], Andreas Petzer [c], Wolfgang Willenbacher [d], Felix Keil [e], Alois Lang [f], Johannes Andel [g], Sonja Burgstaller [h], Otto Krieger [i], Willi Oberaigner [j], Kurt Sihorsch [k], Richard Greil [l]

European Journal of Cancer 58 (2016) 112–121



In patients with normal cardiac function, 6 cycles of R-CHOP resulted in a low rate of early cardiotoxicity. NPL-doxorubicin did not reduce cardiotoxicity, although cardiac safety signals were elevated in R-CHOP compared to R-COMP.

Rituximab plus bendamustine as front-line treatment in frail elderly (>70 years) patients with diffuse large B-cell non-Hodgkin lymphoma: a phase II multicenter study of the *Fondazione Italiana Linfomi*

Sergio Storti,[1] Michele Spina,[2] Emanuela Anna Pesce,[3] Flavia Salvi,[4] Michele Merli,[5] Alessia Ruffini,[6] Giuseppina Cabras,[7] Annalisa Chiappella,[8] Emanuele Angelucci,[9] Alberto Fabbri,[10] Anna Marina Liberati,[11] Monica Tani,[12] Gerardo Musuraca,[13] Annalia Molinari,[14] Maria Pia Petrilli,[1] Carmela Palladino,[4] Rosanna Ciancia,[2] Andrea Ferrario,[5] Cristiana Gasbarrino,[1] Federico Monaco,[4] Vincenzo Fraticelli,[1] Annalisa De Vellis,[1] Francesco Merli[15] and Stefano Luminari[15,16]

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Table 2. Baseline characteristics of patients eligible for the study (n=45).

	Status	Missing	N (%)
Sex	Male	-	26 (58)
Age (years)	Median (range)	-	81 (71-89)
Hb (g/dL)	Median (range)	-	12.9 (7.8-16.1)
Stage	I II III IV	-	7 (16) 10 (23) 6 (14) 22 (48)
ECOG PS	>1	1	16 (36)
ENS	>1	-	11 (24)
LDH	>ULN	-	16 (36)
IPI	3-5	1	25 (57)
CGA	Unfit with age ≥80 years frail	-	35 (78) 10 (22)
LVEF (%)	Median (range)	4	60 (43-70)

Table 3. Response after planned rituximab plus bendamustine treatment.

Response	R8+B6 (n=36) N (%)	R6+B4 (n=9) N (%)	Total (n=45) N (%, %95CI)
CR	19 (53)	5 (56)	24 (53; 38-68)
PR	4 (11)	-	4 (9; 2-21)
ORR			28 (62; 47-76)
SD	1 (3)	-	1 (2; 0-12)
PD	9 (25)	4 (44)	13 (29; 16-44)
Not assessed	1 (3)	-	1 (2; 0-12)
Death in treatment *	2 (6)	-	2 (4; 1-15)

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2-yrs PFS 38%

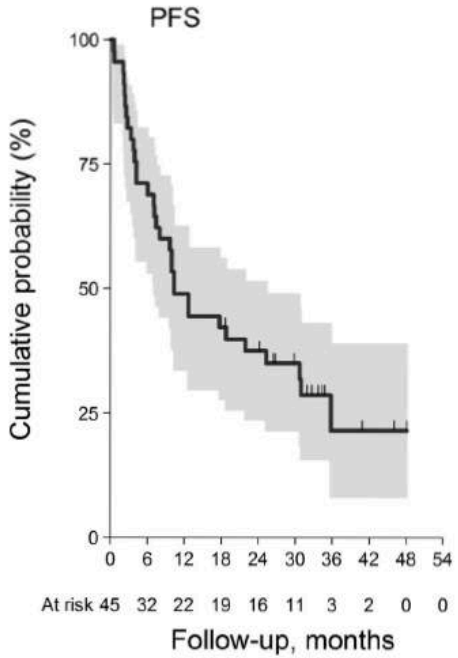

Table 4. Overall toxicities according to CTCAE v.4.0 categories with grade.

	All grades		Grade 3		Grade 4	
	n	%	n	%	n	%
Anemia	20	44.4	1	2.2	0	0.0
Leucopenia	19	42.2	3	6.7	2	4.4
Neutropenia	29	64.4	8	17.8	9	20.0
Thrombocytopenia	20	44.4	4	8.9	0	0.0
Febrile neutropenia	3	6.7	0	0.0	1	2.2
Infections	9	20.0	2	4.4	0	0
Fever	2	4.4	0	0.0	0	0.0
Cardiac disorders	4	8.9	1	2.2	1	2.2
Gastrointestinal disorders	14	31.1	0	0.0	0	0.0
General disorders and administration site conditions*	5	11.1	1	2.2	0	0.0
Hepatobiliary disorders	2	4.4	0	0.0	0	0.0
Metabolism and nutrition disorders	3	6.7	1	2.2	0	0.0
Nervous system disorders	4	8.9	0	0.0	0	0.0
Renal and urinary disorders	4	8.9	1	2.2	0	0.0
Skin and subcutaneous tissue disorders	9	20.0	0	0.0	0	0.0
Vascular disorders	2	4.4	0	0.0	0	0.0
Other (specify) **	4	8.9	0	0.0	0	0.0

JOURNAL OF CLINICAL ONCOLOGY | ASCO SPECIAL ARTICLE

Prevention and Monitoring of Cardiac Dysfunction in Survivors of Adult Cancers: American Society of Clinical Oncology Clinical Practice Guideline

Armenian, S. H. et al. J. Clin. Oncol. 35, 893–911 (2017).

1. **Which patients with cancer are at increased risk for developing cardiac dysfunction?**

2. **Which preventive strategies are effective in minimizing risk during the administration of potentially cardiotoxic cancer therapy?**

3. **What are the preferred surveillance and monitoring approaches in patients at risk for cardiac dysfunction?**

Recommendation 1.1. It is recommended that patients with cancer who meet any of the following criteria should be considered at increased risk for developing cardiac dysfunction.

➢ **Treatment that includes any of the following:**

- **High-dose anthracycline**
  - doxorubicin ≥ 250 mg/m2
  - epirubicin ≥ 600 mg/m2
- **Lower-dose anthracycline + lower-dose RT**
  (where the heart is in the treatment field)
  - doxorubicin < 250 mg/m2
  - epirubicin < 600 mg/m2
  - RT < 30 Gy
- **High-dose radiotherapy**
  (where the heart is in the treatment field)
  - RT ≥ 30 Gy

ASCO guidelines

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3 **Which preventive strategies** are effective **in minimizing risk** during the administration of potentially cardiotoxic cancer therapy?

Recommendation 3.1.
Clinicians should screen for and actively manage modifiable cardiovascular risk factors in all patients receiving potentially cardiotoxic treatments.

- Smoking
- Hypertension
- Diabetes
- Dyslipidemia
- Obesity

Recommendation 3.2.
Clinicians may incorporate a number of strategies

- **liposomal formulation** of doxorubicin
- continuous infusion of doxorubicin
- cardioprotectant dexrazoxane

Recommendation 4.2.
In individuals with clinical signs or symptoms concerning for cardiac dysfunction during routine clinical assessment, the following strategy is recommended:

- Echocardiogram for diagnostic workup
- Cardiac magnetic resonance imaging (MRI) or multigated acquisition (MUGA)
- Serum cardiac biomarkers